

WHAT IS CLAIMED IS:

1. A linear motor, comprising:

a magnet;

a coil; and

a jacket having an inside comb-shaped member extending along a driving direction, wherein the coil is engaged by teeth of said comb-shaped member and wherein a cooling medium is flown through an inside space enclosed by said jacket.

2. A linear motor according to Claim 1, wherein

said comb-shaped member includes base portions provided on mutually opposed inside faces of said jacket and formed in parallel to the driving direction and to be opposed to each other, and a pillar-like portion for connecting said base portions, wherein the coil is floatingly supported by said base portions while it is held fixed by said pillar-like portion with respect to the driving direction.

3. A linear motor according to Claim 1, wherein

said linear motor includes a plurality of coils arrayed along the driving direction with partial overlapping with each other, wherein each coil has a bent end portion to avoid mutual interference of the partially overlapped portions of the coils, and wherein the coils are disposed with their central

Sub
29

09619665-071900

portions placed substantially at the same level.

4. A linear motor according to Claim 3, wherein said jacket has a central small-thickness portion with an outside recessed portion, wherein the bent end portions of the coils are disposed at the recessed portion, and wherein the central small-thickness portion is reinforced by the recessed portion.

5. A linear motor according to Claim 1, wherein said jacket serves as a guide for an element to be driven by said linear motor.

6. A stage system, comprising:
a movable stage;
a linear motor having a magnet and a coil, for driving said stage; and
a jacket having an inside comb-shaped member extending along a driving direction, wherein the coil is engaged by teeth of said comb-shaped member and wherein a cooling medium is flown through an inside space enclosed by said jacket.

7. An exposure apparatus, comprising:
a movable stage for holding a substrate thereon;
a linear motor having a magnet and a coil,

SUB
29
cont.

00619665-071900

for driving said stage; and

a jacket having an inside comb-shaped member extending along a driving direction, wherein the coil is engaged by teeth of said comb-shaped member and wherein a cooling medium is flown through an inside space enclosed by said jacket.

8. A device manufacturing method, comprising the steps of:

applying a photosensitive material onto a substrate;

exposing the substrate by use of an exposure apparatus including a movable stage for holding a substrate thereon, a linear motor having a magnet and a coil, for driving said stage, and a jacket having an inside comb-shaped member extending along a driving direction, wherein the coil is engaged by teeth of said comb-shaped member and wherein a cooling medium is flown through an inside space enclosed by said jacket; and

developing the exposed substrate.

9. A linear motor, comprising:

a magnet;

a coil; and

a jacket having a reinforcement portion extending in parallel to a driving direction, wherein

00619665-071900

Sub
29
cont.

5 sub 29 cont. said coil is enclosed by said jacket and wherein a cooling medium is flown through an inside space of said jacket.

5 10. A linear motor according to Claim 9, wherein said reinforcement portion is formed on an outside face of said jacket.

10 11. A linear motor according to Claim 9, wherein said reinforcement portion is formed at a position not interfering with relative motion of said magnet and said coil.

15 12. A linear motor according to Claim 9, wherein said reinforcement portion is made of one of aluminum, ceramics and resin.

20 13. A linear motor according to Claim 9, wherein said reinforcement portion is made integral with said jacket, and wherein said reinforcement portion is defined by a portion having a protruded shape with respect to a level of a portion of said jacket where said magnet and said coil are opposed to each other.

25 14. A linear motor according to Claim 13, wherein said jacket and said reinforcement portion being integral with each other are made of one of ceramics

09619665 .071900

and resin.

5 Sub 29 cont.
15 15. A linear motor according to Claim 13, wherein the protruded shape portion of said jacket is defined by an inside recessed portion of said jacket where a portion of the coil is placed.

10 16. A linear motor according to Claim 9, wherein at least one of an upper half and a lower half of a section of said jacket taken along a plane perpendicular to the driving direction has a recessed shape portion.

15 17. A stage system, comprising:

a movable stage;

a linear motor having a magnet and a coil, for driving said stage; and

20 a jacket having a reinforcement portion extending in parallel to a driving direction, wherein said coil is enclosed by said jacket and wherein a cooling medium is flown through an inside space of said jacket.

25 18. An exposure apparatus, comprising:

a movable stage for holding a substrate thereon;

a linear motor having a magnet and a coil,

for driving said stage; and

a jacket having a reinforcement portion
extending in parallel to a driving direction, wherein
said coil is enclosed by said jacket and wherein a
cooling medium is flown through an inside space of
said jacket.

19. A device manufacturing method, comprising the
steps of:

applying a photosensitive material onto a
substrate;

exposing the substrate by use of an exposure
apparatus having a movable stage for holding a
substrate thereon, a linear motor having a magnet and
a coil, for driving said stage, and a jacket having a
reinforcement portion extending in parallel to a
driving direction, wherein said coil is enclosed by
said jacket and wherein a cooling medium is flown
through an inside space of said jacket; and

developing the exposed substrate.

00619665-071900

SUB
29
cancel.

add
2/10